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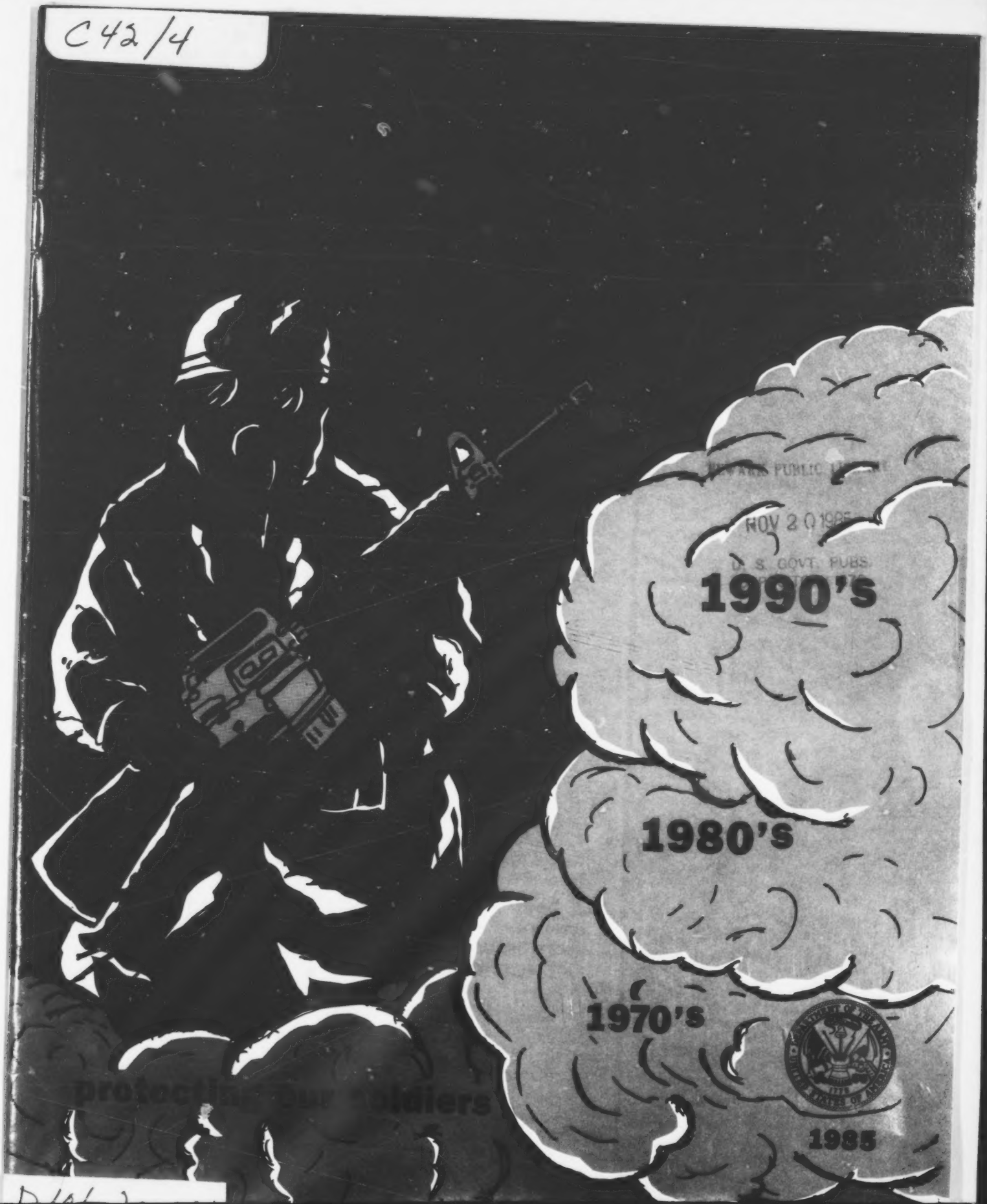

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PREPARED BY THE UNITED STATES ARMY NUCLEAR AND
CHEMICAL AGENCY, FORT BELVOIR, VIRGINIA 22150-3198

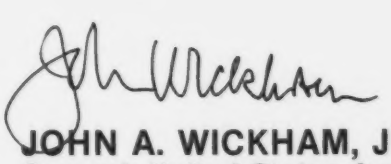
FOREWORD

The U.S. policy with respect to chemical warfare is clear and is based on three principles. First, we renounce the first use of chemical warfare agents. Second, we are attempting to negotiate a comprehensive treaty to ban chemical weapons. Finally, in the absence of a ban on chemical weapons, we seek to deter use by convincing an adversary that his forces will suffer unacceptable consequences if he initiates chemical warfare.

Retaliatory capability and defensive posture go hand-in-hand toward creating deterrence. Defense must be a top priority because of our paramount principle of no first use. A strong defensive capability will enable our soldiers to survive a first strike and continue to fight in a chemical environment, at least long enough to retaliate and force our adversary to terminate his use of chemical warfare.

Our chemical defensive posture has improved significantly over the past 10 years. This progress has been the direct result of Congressional support coupled with the dedicated efforts of military and civilian personnel at all levels. Great strides have been made in terms of doctrine and chemical defense equipment. As impressive as these gains have been, chemical defense equipment improvements, for the most part, represent quick fixes using existing technology. Our challenge for the next decade is to apply emerging technology to provide the best available equipment to our armed forces and to secure a solid, enhanced chemical warfare defensive posture which, when coupled with a credible retaliatory capability, will give us the deterrence we seek.

This booklet describes what I refer to as our "program for survival" in chemical warfare. It provides an overview of where we were in the 1970's, where we are today, and a roadmap towards the 1990's for this vital component of "total Army readiness."



JOHN A. WICKHAM, JR
General, United States Army
Chief of Staff

PROGRAM FOR SURVIVAL

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INTRODUCTION

THREAT—

DURING WORLD WAR I
CHEMICALS WERE USED
EFFECTIVELY
AGAINST COMBATANTS WHO WERE
UNPREPARED.

DURING WORLD WAR II
CHEMICALS
WERE NOT USED.
COMBATANTS WERE PREPARED!

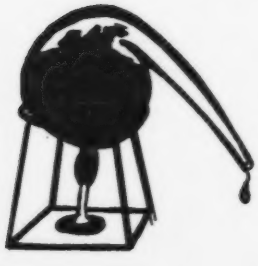
Since World War II, the United States has maintained a capability to retaliate in order to deter attacks employing chemical weapons.

Toxic chemicals have never been used against an enemy who had adequate defensive capability plus a capability to retaliate.

THE RELATIVE EASE WITH WHICH
CHEMICAL AGENTS CAN BE
PRODUCED OR PURCHASED
HAS LED TO

PROLIFERATION

Any nation with an industrial chemical production base can produce chemical agents. Fifteen nations are known to have stocks of chemical agents today.



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INDUSTRIAL
BASE

TOXIC
CHEMICALS

U.S. POLICY

In 1984 the US tabled a draft chemical weapons ban treaty at the conference on disarmament in Geneva.

NO FIRST USE OF CHEMICAL AGENTS

[A HIGH MORAL GROUND]

VERIFIABLE BAN ON USE OF CHEMICALS

Until a complete and verifiable ban on chemical weapons is achieved, the route to deterrence is through maintenance of a small, safe, effective stockpile that would discourage first use by the enemy, or if used in retaliation, would deny a military advantage to any initiator of chemical warfare.

U.S. PROPOSED TREATY

- **WORLDWIDE BAN OF CHEMICAL AGENTS**
- **COMPLETE DESTRUCTION OF EXISTING STOCKS**
- **VERIFICATION BY ON-SITE INSPECTIONS**

A strong defensive capability will enable us to survive, retaliate, and continue to fight.

DETERRENCE

DEFENSE

CREDIBLE RETALIATORY CAPABILITY

DOCTRINE

DOCTRINE

PRESCRIBES THE WAY WE USE

DEFENSIVE CAPABILITIES

TO

SURVIVE

ON A CONTAMINATED BATTLEFIELD

CHEMICAL DEFENSE

PLUS

CREDIBLE
RETALIATORY CAPABILITY

ALLOW US TO

CONTINUE TO FIGHT

AND

WIN

Chemical defense doctrine has evolved over the last few years and is based on three principles.

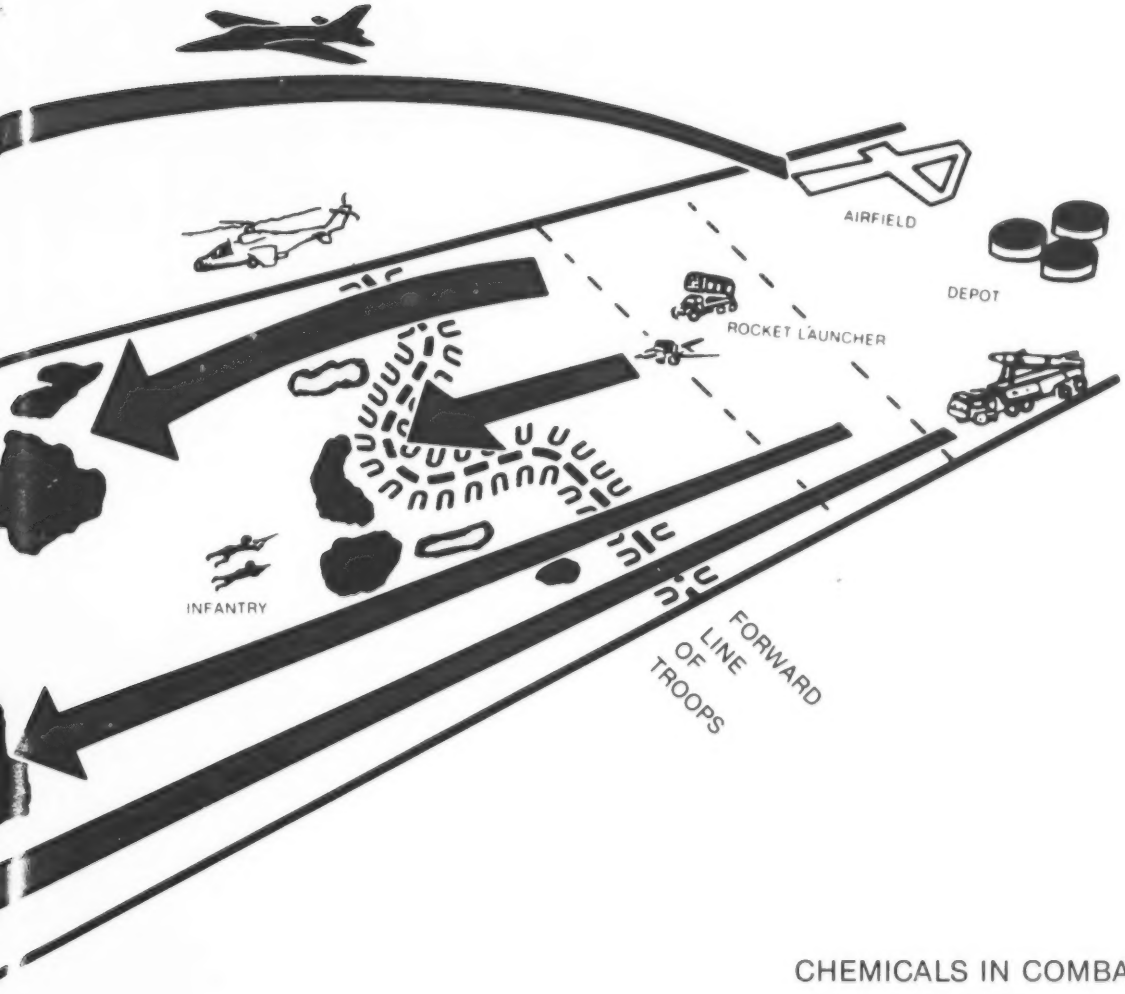
First, soldiers will avoid contamination if the scheme of maneuver permits.

Second, soldiers will protect themselves from the lethal or incapacitating hazards if chemical agents cannot be avoided.

Finally, soldiers will clean up (decontaminate) themselves and their equipment in order to stop the spread of contamination and reduce the debilitating effects of wearing protective clothing.

THE CHEMICAL BATTLEFIELD

PERSISTENT, SEMI-PERSISTENT, AND NON-PERSISTENT AGENTS MAY BE ENCOUNTERED. PERSISTENT AGENTS WILL CONTAMINATE A TARGET FOR DAYS. SEMI-PERSISTENT AGENTS WILL REMAIN FOR HOURS, AND NON-PERSISTENT AGENTS WILL LAST FOR ONLY A FEW MINUTES.



CHEMICALS IN COMBAT

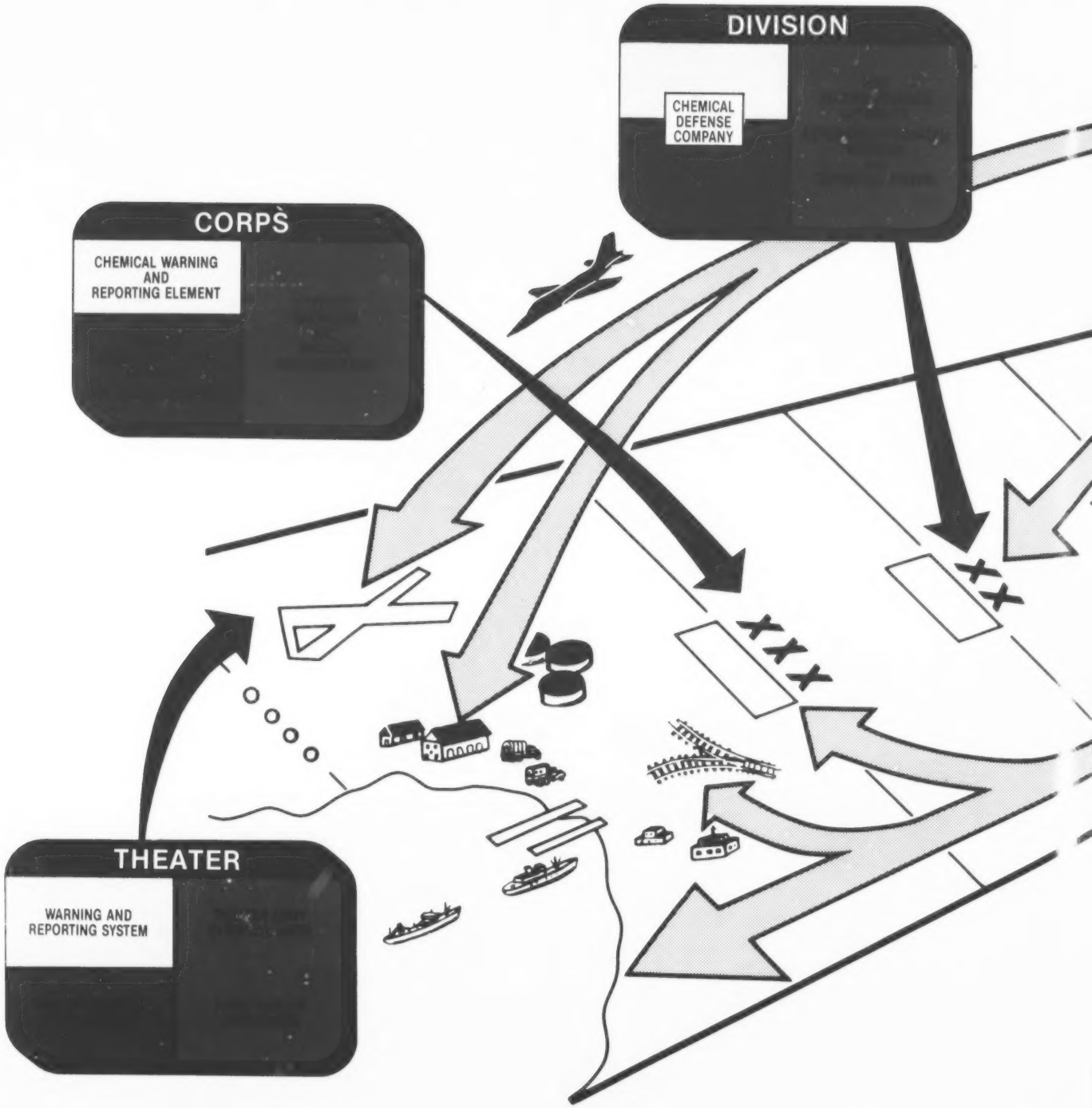
PERSISTENT
(DAYS)

SEMI-PERSISTENT
(HOURS)

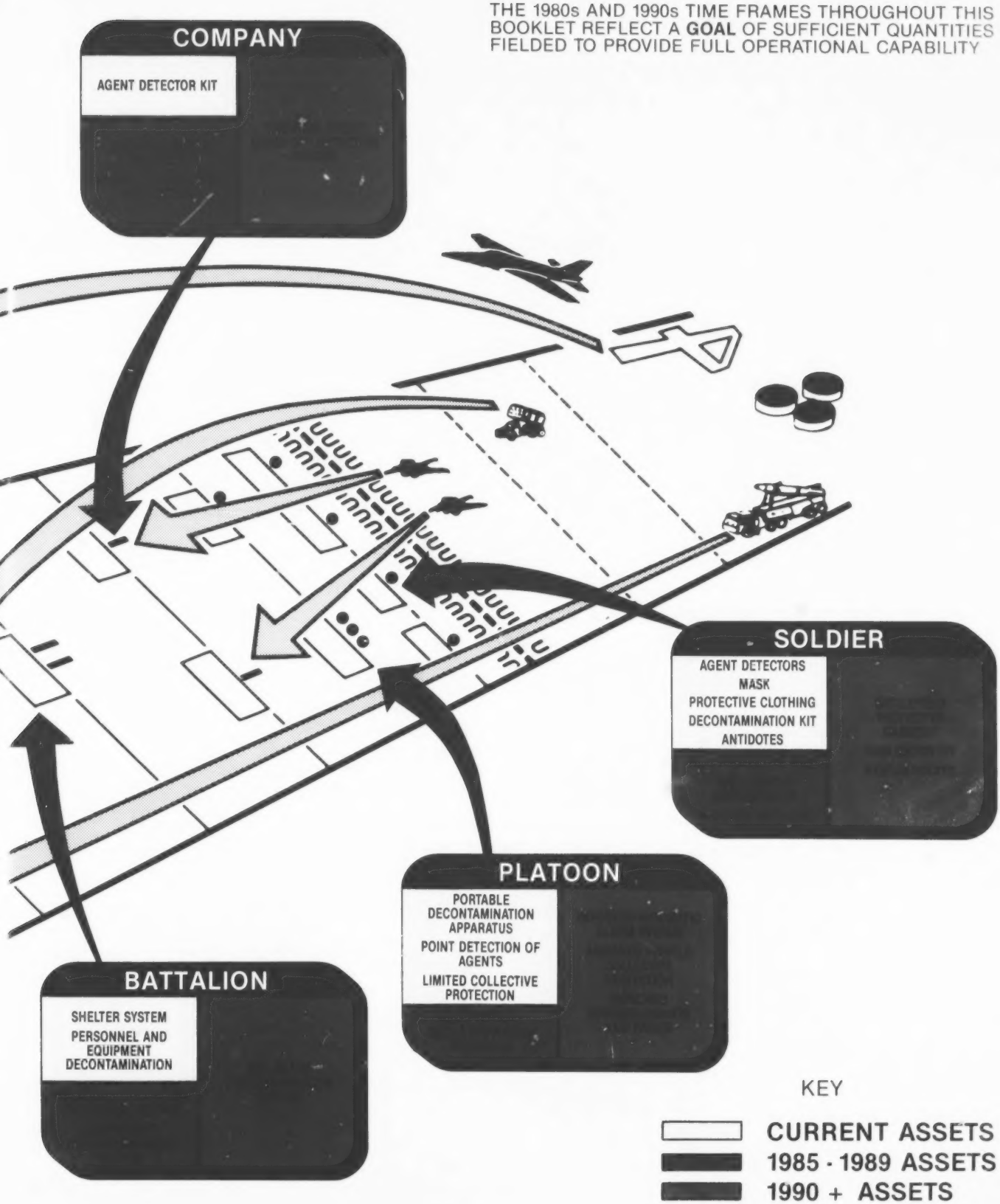
NON-PERSISTENT
(MINUTES)

THREAT EMPLOYMENT CAPABILITIES

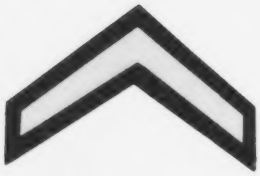
CURRENT AND FUTURE CHEMICAL DEFENSIVE CAPABILITIES OF ACTIVE AND RESERVE COMPONENT UNITS



THE 1980s AND 1990s TIME FRAMES THROUGHOUT THIS BOOKLET REFLECT A **GOAL** OF SUFFICIENT QUANTITIES FIELDED TO PROVIDE FULL OPERATIONAL CAPABILITY



SOLDIER

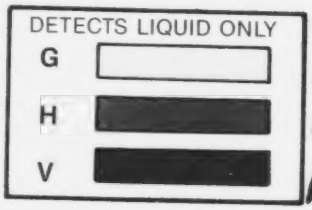


Individual soldiers are our most important assets. They must be trained and equipped to fight effectively on the chemical battlefield.

Early warning allows soldiers to locate and avoid contamination when possible. Specific agent identification governs first aid requirements to treat casualties.

When the scheme of maneuver does not permit soldiers to avoid contamination, they must wear protective clothing and equipment in order to continue their missions in a contaminated environment.

MANUAL CHEMICAL AGENT DETECTION KITS OR AGENT DETECTOR PAPER



DETECTOR PAPER
FOR:
G-NONPERSISTENT NERVE
H-BLISTER
V-PERSISTENT NERVE

-DETECTOR KIT-
TEST FOR AGENTS
TAKES 15 MINUTES

PROTECTIVE MASK

THE FIRST LINE
OF DEFENSE AGAINST
CHEMICAL AGENTS

PROTECTIVE CLOTHING

- UNCOMFORTABLE UNDERGARMENT
- CHARCOAL IMPREGNATED LINERS
- PERFORMANCE DEGRADING

NERVE AGENT ANTIDOTE - LIMITED TREATMENT

PROTECTIVE OINTMENT

TO DECONTAMINATE
BLISTER AND NERVE
AGENTS

HARMFUL TO EYES

DECONTAMINATION KIT

BLISTER
AND
NERVE AGENT

USED ON MASK, CLOTHING
AND EQUIPMENT
- POISONOUS
- EYE IRRITANT

SOLDIER

● BATTLEDRESS OVERGARMENT ENSEMBLE

- ELIMINATES UNDERGARMENTS
- PROVIDES FLEXIBLE PROTECTIVE POSTURE - SOLDIERS DRESS ACCORDING TO THREAT

- INCLUDES -

The battledress overgarment offers at least six hours of chemical protection even after 14 days wear time.

● IMPROVED NERVE AGENT ANTIDOTE

● NEW PROTECTIVE MASK

- BETTER PROTECTION
- INTERCHANGEABLE FILTER CANISTERS
- ENHANCED COMMUNICATION
- BETTER VISION

New protective masks feature quick-change canisters which may be worn on the left or right side.

● BATTLEFIELD PROTECTIVE GARMENT

- INTEGRATED COMBAT NBC SUIT
- COMPLETE UNIFORM WITH GLOVES, BOOTS, AND HELMET
- INCREASED WEAR TIME- 30 DAYS
- PROTECTS SOLDIER FOR 72 HOURS AFTER CONTAMINATION
- FLAME RESISTANT

The battlefield protective garment provides greater protection for longer periods, increased manual dexterity, and improved comfort.

● IMPROVED ANTIDOTES AND SKIN DECONTAMINATION KIT

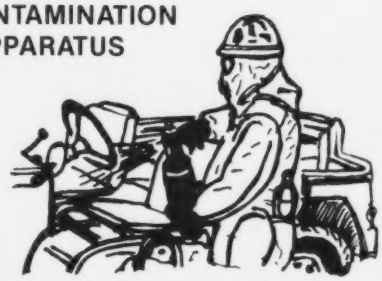
PLATOON

Chemical defensive equipment at platoon level provides soldiers with additional warning, protection, and decontamination capabilities.

1970's

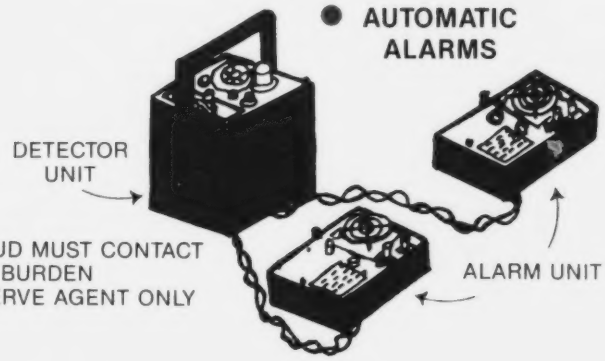
PORTABLE DECONTAMINATION APPARATUS

- PARTIAL DECONTAMINATION OF VEHICLES AND CREW SERVED WEAPONS
- DECONTAMINANT IS CORROSIVE AND FLAMMABLE

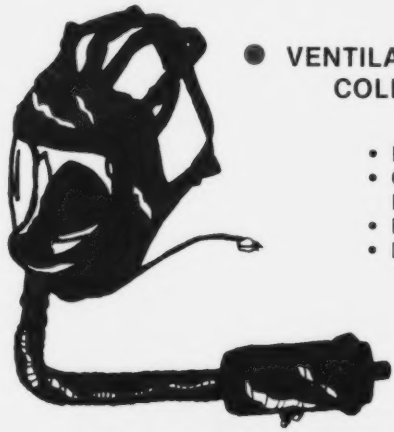


The automatic chemical agent alarm system can be handcarried, backpacked, or mounted on a tactical vehicle. Alarm units may be placed up to 400 meters upwind of the detector unit. Each detector unit can accommodate up to 5 remote alarms.

● AUTOMATIC ALARMS



- AGENT CLOUD MUST CONTACT
- LOGISTICAL BURDEN
- DETECTS NERVE AGENT ONLY



● VENTILATED FACEPIECE OFFERS COLLECTIVE PROTECTION

- PROTECTS ARMORED VEHICLE CREW
- CONNECTS TO GAS PARTICULATE FILTER UNIT IN VEHICLE
- POSITIVE PRESSURE FILTERED AIR
- DETACHES FOR USE OUTSIDE VEHICLE

● NEW PORTABLE DECONTAMINATION APPARATUS

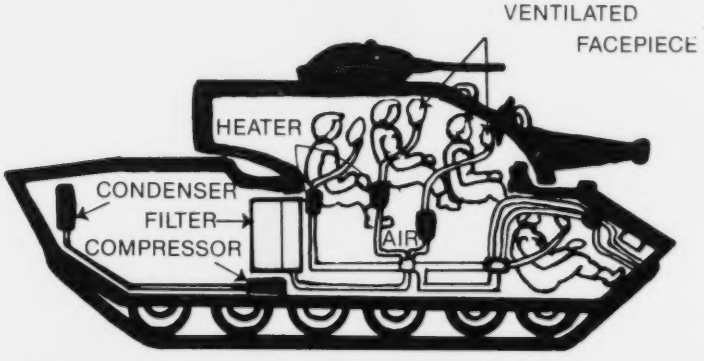
- ALLOWS DECONTAMINATION OF 1200 SQUARE FEET
- USED ON TACTICAL VEHICLES OR SELF PROPELLED/TOWED ARTILLERY

PLATOON

● REDESIGNED AUTOMATIC CHEMICAL AGENT ALARM SYSTEM

- IMPROVED RELIABILITY
- REDUCED MAINTENANCE REQUIREMENTS
- LOWER LOGISTICS COST
- GREATER DETECTION CAPABILITY

● ARMORED VEHICLE COLLECTIVE PROTECTION SYSTEM



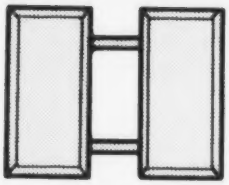
- ENVIRONMENTAL CONTROLS
- REDUCES
  - PROTECTIVE CLOTHING REQUIREMENTS
  - VAPOR CONTAMINATION INSIDE VEHICLE
  - HEAT STRESS

● IMPROVED DECONTAMINATION CAPABILITY

- NEW GENERAL PURPOSE, NONCORROSIVE DECONTAMINATING AGENT
- SELF DECONTAMINATING PAINTS

Collective protection in vehicles allows crews to operate in spite of external contamination. This, in effect, increases the effectiveness of their weapon system.

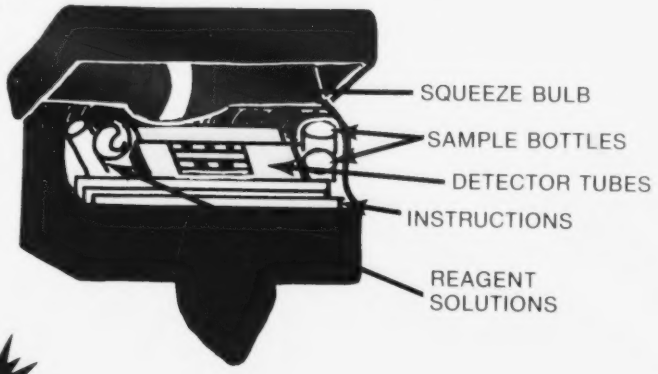
COMPANY

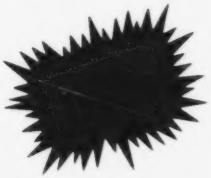


Company level assets build upon the platoon capabilities and further support our soldiers on the chemical battlefield.

CHEMICAL AGENT DETECTOR KIT

- DETECTS VAPORS
  - BLOOD
  - CHOKING
  - BLISTER
  - NERVE





The chemical agent monitor is a portable, battery-powered, automatic monitoring system capable of continuous operation for up to six hours.

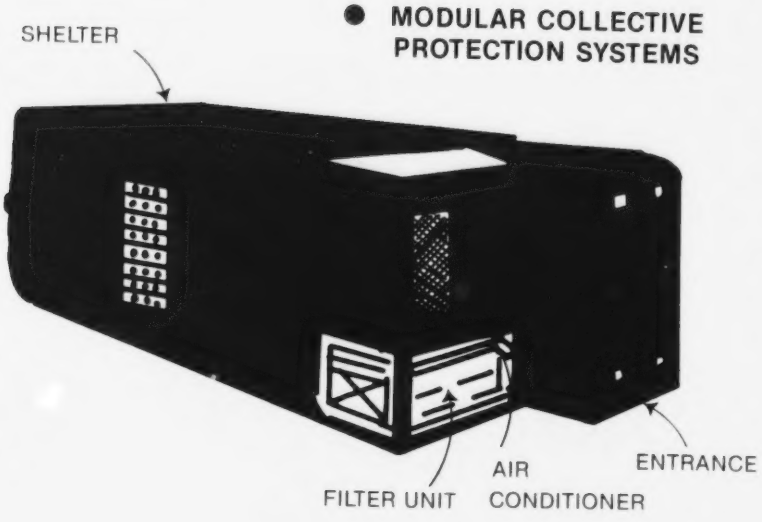
CHEMICAL AGENT MONITOR

- HAND HELD MONITORING DEVICE
- DETECTS BLISTER AND NERVE AGENT VAPORS
- USED TO DETERMINE COMPLETENESS OF DECONTAMINATION

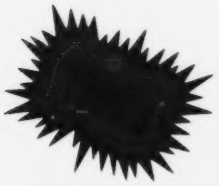
Companies have assigned full time chemical sergeant for chemical training and operations.

COMPANY

- **MODULAR COLLECTIVE PROTECTION SYSTEMS**



Modular systems provide clean air for soldiers in air defense or field artillery fire control centers.

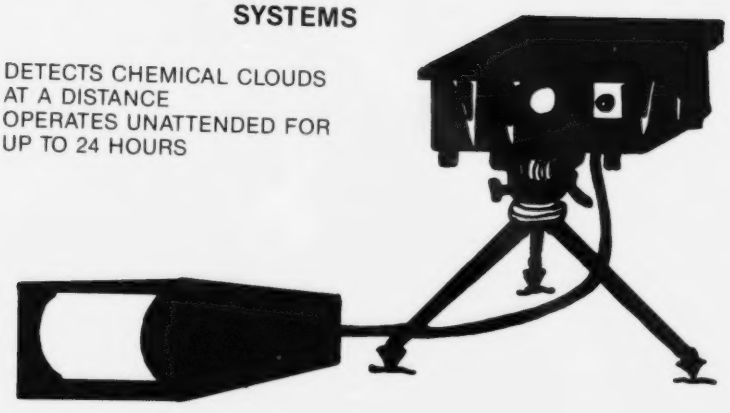


The automatic, stand off capability to detect chemical clouds enables commanders to react to potential hazards and avoid contamination of soldiers.

IMPROVED

- **ALARM SYSTEMS**

- DETECTS CHEMICAL CLOUDS AT A DISTANCE
- OPERATES UNATTENDED FOR UP TO 24 HOURS



By improving detection and warning systems, we seek to ensure our soldiers can survive to fight and win in a contaminated environment.

BATTALION

1970's

Battalion assets offer soldiers collective protection shelters and additional decontamination equipment.

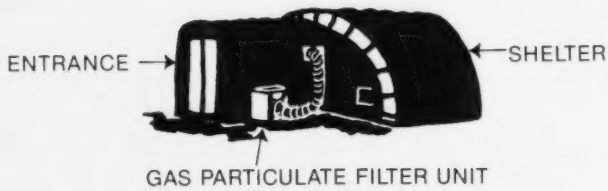
Early collective protection systems were pressurized enclosures capable of protecting up to ten occupants. They were primarily employed as medical facilities.

Power driven decontamination apparatus was used to decontaminate equipment and terrain. The system also included a personnel shower assembly.

Battalions have assigned full time chemical sergeant.

The inflatable collective protection system is used to convert a tent or room of an existing building into a positive pressure shelter where soldiers can work without having to wear protective masks and clothing.

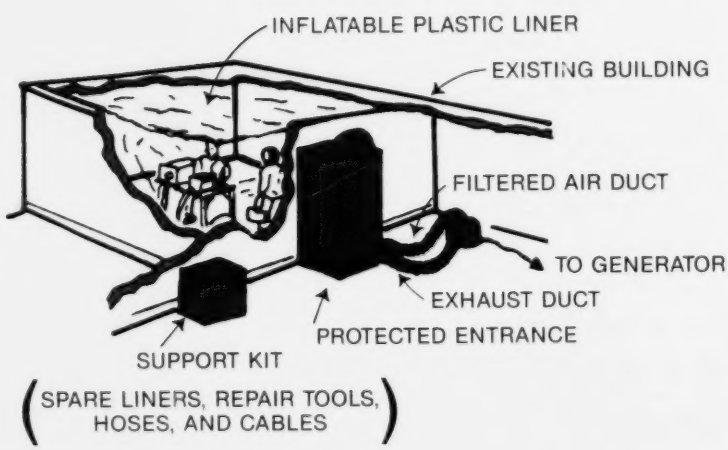
SHELTER SYSTEM
TRAILER TRANSPORTABLE



POWER DRIVEN DECONTAMINATION APPARATUS

- EMPLOYED FROM A 5 TON TRUCK
- EMPLOYED BY SELECTED BATTALIONS ONLY

- **INFLATABLE COLLECTIVE PROTECTION SYSTEM**



BATTALION

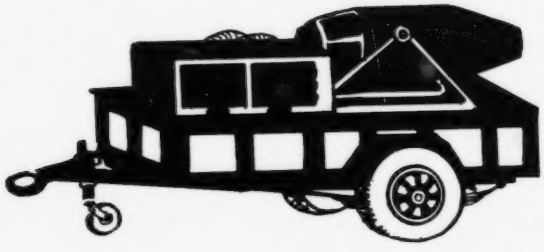
LIGHTWEIGHT DECONTAMINATION SYSTEM

- RAPID, PARTIAL DECONTAMINATION OF VEHICLES WITH HIGH PRESSURE HOT WATER

The lightweight decontamination system is designed to draw water from any source and deliver it at pressures up to 100 psi and temperatures up to 120°C. It provides pressurized hot water and steam to wash equipment prior to the application of decontaminants and to rinse afterwards.

Combat battalions have, in addition to a sergeant, an assigned chemical lieutenant.

NO - WATER SYSTEM

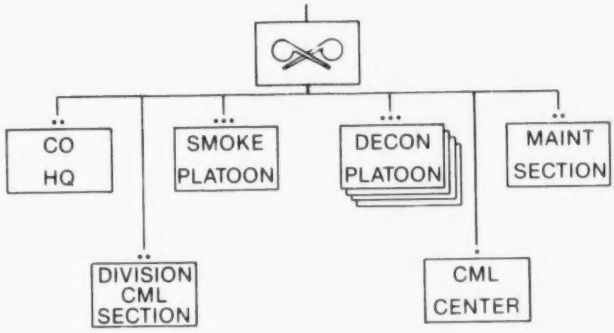


Waterless decontamination systems provide for decontamination of surfaces of large equipment (trucks, tanks, vans, self propelled artillery, etc.) without the need for a nearby water source or hauling large amounts of water. Hot air decontamination, multipurpose decontaminants needing no water rinse, and non-water based decontaminants are among numerous concepts under exploration.

DIVISION ★★

The division chemical defense company provides decontamination of equipment, smoke support, and chemical staff support to the division.

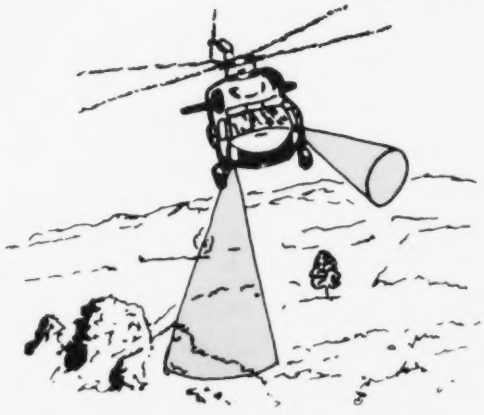
- **CHEMICAL DEFENSE COMPANY**



The integrated warning and reporting system is the primary means of alerting soldiers of actual or predicted chemical hazards.

FIGHTING VEHICLES

- **NBC RECONNAISSANCE CAPABILITY**



AND

- **INTEGRATED WARNING AND REPORTING SYSTEM**

★★★ CORPS

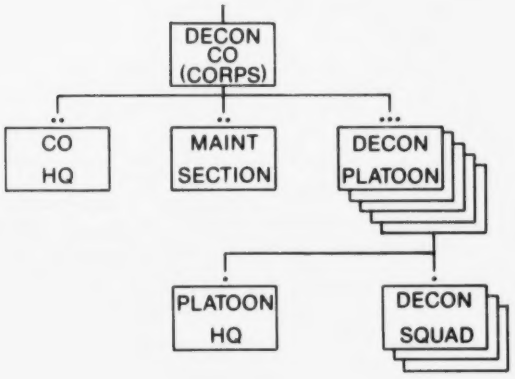
CHEMICAL WARNING AND REPORTING ELEMENT

1970's

- OFFICER, NCO, PLUS AUGMENTATION BY NON-CHEMICAL PERSONNEL
- RECEIVES REPORTS FROM DIVISION UNITS AND PROVIDES ADVICE AND ASSISTANCE TO COMMANDER AND STAFF

1970's

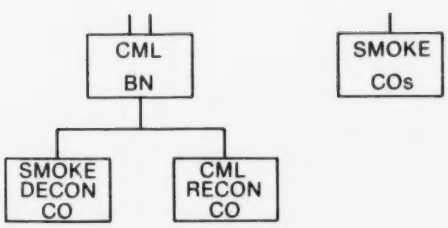
● CHEMICAL DECONTAMINATION COMPANY



Decontamination companies support all elements of the corps. One company is allocated for each division and an additional company is allocated for non-divisional units in the corps area.

1970's

Additional chemical units provide smoke, decontamination, and reconnaissance support behind division rear boundaries.



● ADDITIONAL CHEMICAL UNITS

THEATER

LIMITED WARNING AND REPORTING SYSTEM

• LIMITED CHEMICAL DEFENSE TEAMS

- DECONTAMINATION
- RECONNAISSANCE
- CHEMICAL REPORTS CENTER

• THEATER ARMY CHEMICAL UNITS

- CHEMICAL BRIGADE
- CHEMICAL BATTALION
- AREA RECONNAISSANCE
- LARGE SCALE DECONTAMINATION
- AGENT IDENTIFICATION
- WARNING AND REPORTING

• FIXED FACILITY PROTECTION

The mission of theater army chemical units is to provide reconnaissance, decontamination, and smoke support to all units in the theater army. In addition, some chemical units have specific missions to provide agent identification and to operate the warning and reporting system.

CONCLUSION

This program for chemical defense is one of the essential elements for a credible deterrence. Our efforts of the 1970's were concentrated on fielding a basic survival capability. We have accomplished this objective. Our efforts for the balance of this decade and into the 1990's are directed at reducing the problems caused by the protective equipment itself and improving our ability to sustain operations in a chemical environment.

To this end, we have a balanced program for research, development, and procurement of chemical defense equipment over the next five years. Our goal is to reduce the burden of operating in a chemical protective posture. Areas of emphasis include individual and collective protection; detection and warning systems; decontamination; and medical research.

We are grateful for Congressional support of past efforts. Although much remains to be done, we are making progress in reestablishing a sound managerial, technical, and doctrinal basis for chemical programs, and in providing our Active and Reserve Component soldiers with the best possible defense. However, defensive efforts alone will not deter. Chemical defense equipment degrades our operational capability resulting in significant tactical disadvantage. We must have a viable retaliatory chemical capability to create a similar or greater degradation to the enemy and, therefore, to cause him to reject use of his chemical weapons. Thus, our most critical need today is the modernized retaliatory capability that can be achieved by getting rid of the old, potentially hazardous chemical weapons we have now while at the same time, replacing them with safer, more effective binary chemical munitions.

DEFENSE ALONE IS NOT ENOUGH